

WHAT IS CLAIMED IS:

1. An image display device, comprising:
  - a pixel having an electro-luminescent element driven to illuminate according to a display signal voltage;
  - 5 a display part configured by a plurality of pixels;
  - a signal line used to write said display signal voltage in said pixel;
  - a pixel selector for selecting a pixel from said plurality of pixels so as to write said display signal voltage therein through said signal line; and
  - 10 a display signal voltage generator for generating said display signal voltage;
  - wherein said display device further includes:
    - an illuminating state controller for controlling a selection of illuminating state or non-illuminating state
    - 15 for each of said plurality of pixels at a time; and
    - a constant voltage supply for supplying a constant voltage to each of said plurality of pixels through said signal line when said illuminating state is selected for
    - 20 said selected pixel.
2. The image display device according to claim 1;
  - wherein one end of said electro-luminescent element provided in each pixel is connected to a common power supply
  - 25 while the other end of said electro-luminescent element is

connected to a first source/drain electrode of an electro-luminescent element driving transistor through a first switch and,

a second source/drain electrode of said electro-luminescent element driving transistor is  
5 connected to a power supply line,

and the gate of said electro-luminescent element driving transistor is connected to a first source/drain electrode of said electro-luminescent element driving  
10 transistor through a second switch, and

the gate of said electro-luminescent element driving transistor is connected to said signal line corresponding to each pixel through a connection capacitor.

15 3. The image display device according to claim 2;  
wherein said first source/drain electrode is a drain electrode and said second source/drain electrode is a source electrode.

20 4. The image display device according to claim 2;  
wherein each of said first switch, said second switch, and said electro-luminescent element driving transistor is a p-channel transistor.

25 5. The image display device according to claim 2;

wherein each of said first switch, said second switch,  
and said electro-luminescent element driving transistor is  
configured as a p-channel transistor and said connection  
capacitor is a MOS (Metal-Oxide-Semiconductor) capacitor  
5 that uses a p-channel.

6. The image display device according to claim 2;  
wherein each of said first switch, said second switch,  
and said electro-luminescent element driving transistor is  
10 a polycrystalline silicon thin film transistor.

7. The image display device according to claim 2;  
wherein each of said first switch, said second switch,  
and said electro-luminescent element driving transistor is  
15 an n-channel transistor.

8. The image display device according to claim 2;  
wherein each of said first switch, said second switch,  
and said electro-luminescent element driving transistor is  
20 an n-channel transistor and said connection capacitor is a  
MOS (Metal-Oxide-Transistor) capacitor that uses an  
n-channel.

9. The display device according to claim 2;

wherein each of said first switch, said second switch,  
and said electro-luminescent element driving transistor is  
an amorphous silicon thin film transistor.

5           10. The image display device according to claim 2;  
              wherein said signal line and said power supply line are  
disposed in parallel and formed by processing the same  
metallic wiring layer.

10           11. The image display device according to claim 10;  
              wherein said connection capacitor is provided on said  
signal line in layers.

              12. The image display device according to claim 2;  
15           wherein said electro-luminescent element driving  
transistor is actually driven in a sub-threshold area in  
which its gate-source voltage is a threshold voltage and  
under.

20           13. The image display device according to claim 1;  
              wherein one end of said electro-luminescent element  
provided in each pixel is connected to a common power supply;  
and

the other end of said electro-luminescent element is connected to a first source/drain electrode of a electro-luminescent element driving transistor;

and a second source/drain electrode of said  
5 electro-luminescent element driving transistor is connected to a power supply line; and

the gate of said electro-luminescent element driving transistor is connected to a first source/drain electrode of said electro-luminescent element driving transistor  
10 through a third switch;

and the gate of said electro-luminescent element driving transistor is connected to said signal line corresponding to each pixel through a connection capacitor.

15 14. The image display device according to claim 13;  
wherein said first source/drain electrode is a drain electrode and said second source/drain electrode is a source electrode.

20 15. The image display device according to claim 13;  
wherein each of said third switch and said electro-luminescent element driving transistor is a p-channel transistor.

25 16. The image display device according to claim 13;

wherein each of said third switch and said  
electro-luminescent element driving transistor is a  
p-channel transistor and said connection capacitor is  
configured by a MOS (Metal-Oxide-Transistor) capacitor that  
5 uses a p-channel.

17. The image display device according to claim 13;  
wherein each of said third switch and said  
electro-luminescent element driving transistor is a  
polycrystalline silicon thin film transistor.

10 18. The image display device according to claim 13;  
wherein each of said third switch and said  
electro-luminescent element driving transistor is an  
n-channel transistor.

15 19. The image display device according to claim 13;  
wherein each of said third switch and said  
electro-luminescent element driving transistor is  
configured as an n-channel transistor and said connection  
20 capacitor is configured by a MOS  
(Metal-Oxide-Semiconductor) capacitor that uses an  
n-channel.

20. The image display device according to claim 13;

wherein each of said third switch and said electro-luminescent element driving transistor is configured by an amorphous silicon thin film transistor.

5           21. The image display device according to claim 13; wherein said signal line and said power supply line are disposed vertically to each other and said power supply line is formed by processing a metallic wiring layer.

10           22. The image display device according to claim 21; wherein said connection capacitor is formed on said signal line in layers.

15           23. The image display device according to claim 13; wherein said electro-luminescent element driving transistor is actually driven in a sub-threshold region in which its gate-source voltage is a threshold voltage and under.

20           24. The image display device according to claim 1; wherein selection of said illuminating/not-illuminating state is repeated in each frame period.

25           25. An image display device, comprising:

a pixel having an electro-luminescent element driven to illuminate according to a display signal voltage;

a display part configured of a plurality of pixels;

a signal line used to write said display signal voltage  
5 in said pixel;

a pixel selector for selecting a pixel from said plurality of pixels to write said display signal voltage therein through said signal line; and

a display signal voltage generator for generating said  
10 display signal voltage;

wherein said device further comprises:

an illuminating state controller for controlling selection of said illuminating state or not-illuminating state for each display part in which a display signal voltage  
15 is written at a time; and

a triangular wave voltage supply for supplying a triangular wave voltage to each of said plurality of pixels through said signal line when said illuminating state is selected for said selected pixel;

20 wherein one end of said electro-luminescent element provided in each pixel is connected to a common power supply while the other end of said electro-luminescent element is connected to a drain electrode of an electro-luminescent element driving transistor; and



a source electrode of said electro-luminescent element driving transistor connected to a power supply line, the gate of said electro-luminescent element driving transistor is connected to a drain electrode of said

5 electro-luminescent element driving transistor through a switch, and the gate of said electro-luminescent element driving transistor is connected to said signal line corresponding to each pixel through a connection capacitor.

10 26. The image display device according to claim 25; wherein said triangular wave voltage consists of one triangular wave.

27. The image display device according to claim 25;  
15 wherein selection of said illuminating state or said /not-illuminating state is repeated in each frame period.

28. A pixel display device comprising:

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a pixel circuit connected to a signal line and a power source line;

wherein the pixel circuit comprises:

a capacitor directly connected to the signal line;

a driving transistor connected to the capacitor  
wherein a node is located between the driving transistor and  
the capacitor;

a reset switch transistor connected to the node at one  
5 end and connected to a drain electrode of the driving  
transistor at the other end;

the power source line connected to the source  
electrode of the driving transistor;

an OLED transistor switch also connected to the drain  
10 electrode of the driving transistor at one end and connected  
to an organic electro-luminescent element at its other end;

a signal voltage applied to said signal line;

a threshold voltage applied to the node and to a gate  
of the driving transistor; and

15 wherein the pixel circuit structure drives the  
organic electro-luminescent element with a driving current  
of the driving transistor free from an influence from  
threshold voltage variation.